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**D1A ADKG**

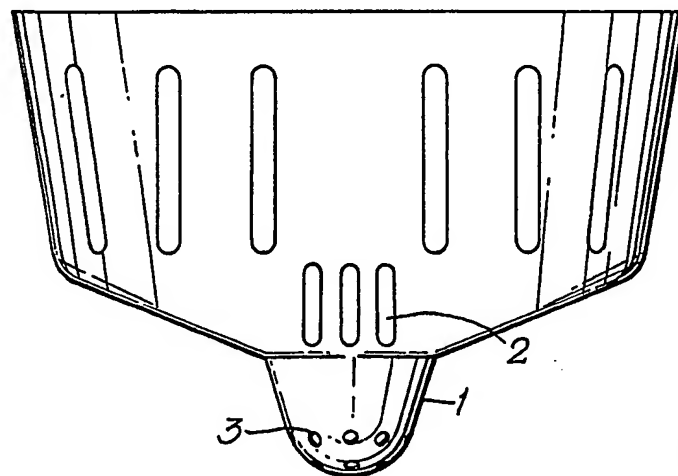
(56) Documents cited  
**GB 2157717 A US 4365853 A**

(58) Field of search  
**UK CL (Edition K) D1A  
INT CL<sup>5</sup> D06F  
Online databases; WPI**

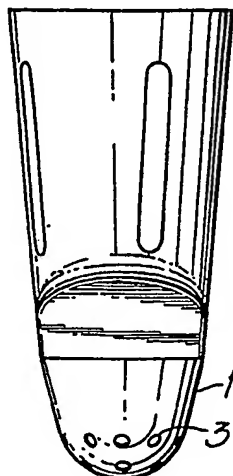
(54) **Detergent dispenser**

(57) A constant delivery of detergent product into the wash liquor can be maintained by using a dispenser containing openings 3 for delivering detergent material, the design of which dispenser is such that it can be refilled in time for ensuring this constant delivery. This dispenser which is equipped with a sink reservoir 1 and view holes 2, is very suitable for dispensing of detergent powder/briquettes-mixtures in industrial single tank reuse ware washing machines.

*Fig.1(b).*



*Fig.1(a).*



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1990.

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Fig.1(a).

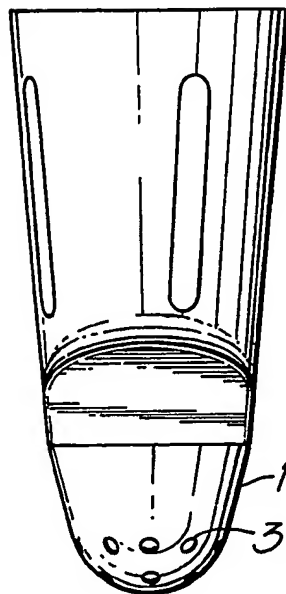


Fig.1(b).

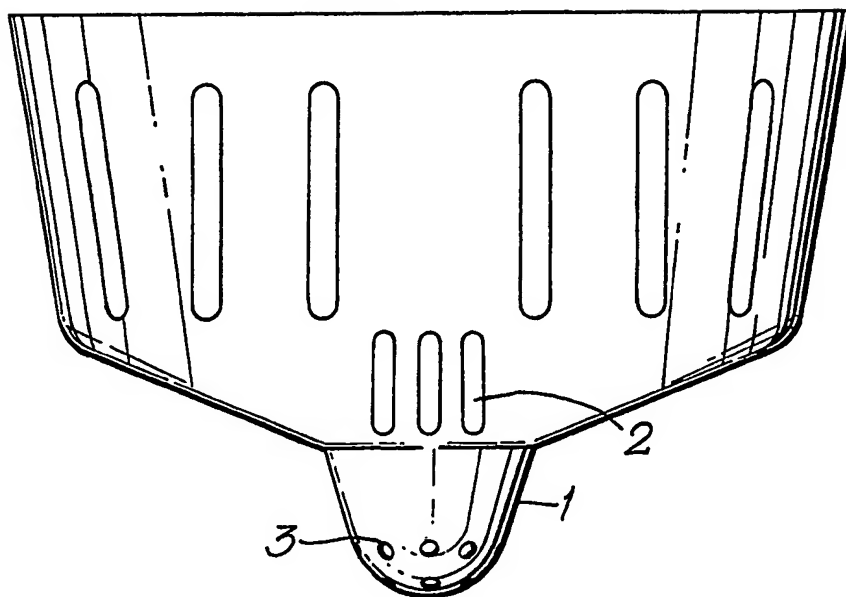
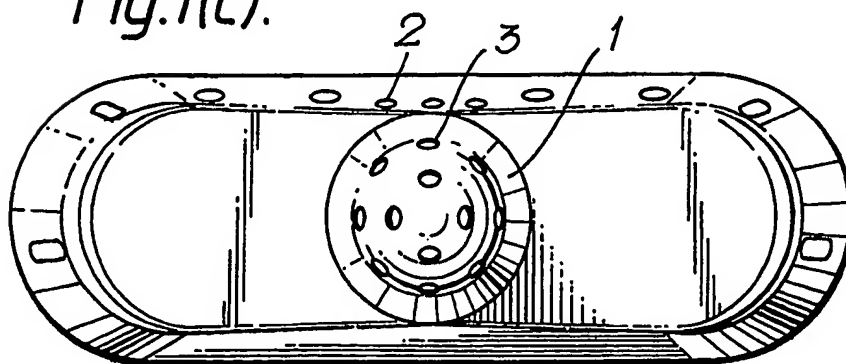


Fig.1(c).



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DISPENSER

5 Technical field of invention

The present invention relates to a dispenser which is applicable for dispensing detergent powder, small detergent blocks or mixtures thereof, and which is adapted for the delivery of detergent material into the wash liquor of an automatic washing machine. The invention is particularly useful in industrial ware washing machines.

15 Background and prior art

Dispensers which can deliver detergent material into the wash liquor in industrial washing machines, are known in the art.

If no automatic dosing equipment is used, these dispensers are usually manually operated and product has to be dosed after each wash cycle to maintain a certain detergent concentration of the wash liquor. This method of dosing is in most cases not convenient and time consuming. Furthermore, the detergent concentration of the wash liquor drops and will remain too low during subsequent washes once it is forgotten to dose the required amount of detergent product. As a result, it is not guaranteed that the cleaning result is always according to standard when dosing is carried out manually in industrial washing machines. This applies particularly, if the dispenser is used inside the washing machine and is filled with detergent material with limited solubility. This is especially evident in ware washing machines with short wash cycle times: when consecutive washes are carried out the concentration of the detergent product in the wash liquor drops slowly to zero if the dispenser is not refilled in time. In

addition, the dilution effect of the rinse added at the end of each individual wash cycle will fasten this drop in detergent concentration when no refilling is carried out.

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It is an object of the present invention to provide a dispenser with which a constant concentration of detergent material in the wash liquor can be maintained during an extended period of time, while no dosing equipment is used.

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It is also an object of the invention to provide a dispenser with which this constant concentration is maintained during a number of consecutive washes whereby each wash comprises a washing cycle and a subsequent diluting rinse cycle. This washing process is usually applied in industrial ware washing machines. It is a further object of the invention that this constant concentration is maintained when this dispenser is filled with a mixture of solid detergent briquettes and detergent powder. In this context, solid detergent briquettes are defined as solid detergent blocks which include several discretely shaped detergent particles such as tablets, cubes, etc. It is a still further object of the invention to provide a dispenser with which it can be visually monitored when refilling is required.

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#### Definition of the invention

The present invention provides a dispenser which is applicable for detergent powder, detergent briquettes or mixtures thereof, which is suitable for use in association with a washing machine, and which contains openings for dispensing detergent material, characterised in that the dispenser is equipped with a sink reservoir (1) located in the bottom part of it and with view holes (2) which are located in the region of the upper level of the sink reservoir and which enable

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the degree of the filling of said dispenser to be visually monitored so that it can be observed when a refill is needed. The invention also relates to the use of this dispenser in an industrial washing machine.

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Detailed description of the invention

10 The dispenser according to the invention is designed such that when using a mixture of detergent powder and detergent briquettes a constant delivery of detergent product into the wash liquor can be maintained over a period in which several consecutive washes are carried out. To achieve this, the dispenser is equipped with a sink reservoir (1) and with view holes (2).

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In order to ensure a constant delivery, the dispenser is filled with a mixture of detergent powder and detergent briquettes. During the first wash the powder will be released from the dispenser and delivers the correct amount of detergent product into the wash liquor. During the next washes the briquettes will gradually dissolve at a delayed rate to provide a constant concentration by compensating the dilution effect of the rinse cycles. As a consequence of the solubility profile of the briquettes the level of the briquettes in the dispenser will gradually decrease because of a reduction of the size of these briquettes. At a certain stage this level passes the upper level of the sink reservoir, which can be observed through the view holes. At this stage, i.e. when only the sink reservoir is filled with the briquettes of reduced size, the dispenser is to be refilled. In view of this, the volume of the sink reservoir is to be chosen such that no underdosing occurs when only this reservoir is filled with briquettes. Obviously, not only the volume of the sink reservoir but also other factors such as the total weight of the detergent product in the dispenser, the size of each "fresh" briquette and the volume of the wash liquor in the

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washing machine influence the risk of underdosing and determine the point in time when refilling is required.

5 In order to be able to use the dispenser in a industrial ware washing machine, it is to be fixed in the spraying cabinet of the washing machine. Good results were obtained when using the dispenser in an industrial single tank reuse ware washing machine.

10 The sink reservoir which has a fully open connection with the rest of the dispenser, may have any shape. However, oval or round reservoirs are preferred. For a smooth delivery of detergent product several holes are usually present in the bottom part of the sink reservoir, the  
15 diameter of which being preferably in the range of from 2 to 5 mm. In order to clearly observe that only the sink reservoir is filled with detergent briquettes, there is preferably a sharp transition between this reservoir and the rest of the dispenser. For the same reason, the colour  
20 of the dispenser is such that there is a good colour contrast between dispenser and detergent briquettes to be applied.

25 The view holes may have any practical size and shape. Preferably, however, view holes are applied which have a vertically directed rectangular shape of which the lower end is located at about the same level as the upper level of the sink reservoir.

30 The dispenser according to the present invention is particularly suitable to be applied together with the detergent containing sachet according to the co-pending British application PC 7258, filed on 26 February 1991. When applying this detergent containing sachet good results  
35 were achieved with respect to the constant detergent product delivery, when a sink reservoir was used having an internal volume being larger than 5 cm<sup>3</sup> and smaller than half of the volume of said dispenser. Preferably, a sink

reservoir with an internal volume of from 5 to 15 cm<sup>3</sup> was applied.

5 A preferred embodiment of the dispenser according to the invention is shown in figure 1. In this figure, two side views (a) and (b) and one top view (c) of this dispenser are depicted clearly demonstrating the locations of the sink reservoir (1), the view holes (2) and the dispensing holes (3).

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Claims

1. A dispenser which is applicable for detergent powder, briquettes and mixtures thereof, which is suitable for use in association with a washing machine, and which contains openings for dispensing detergent material, characterised in that said dispenser is equipped with a sink reservoir (1) located in the bottom part of it and with view holes (2) which are located in the region of the upper level of the sink reservoir and which enable the degree of the filling of the dispenser to be visually monitored so that it can be observed when a refill is needed.

2. A dispenser according to claim 1, wherein said dispenser is shaped so as to exhibit a sharp transition between the sink reservoir and the rest of the dispenser.

3. A dispenser according to claim 1 or 2, wherein the sink reservoir is equipped with holes (3), the diameter of which is in the range of from 2 to 5 mm.

4. A dispenser according to any of claims 1 - 3, wherein the internal volume of the sink reservoir is larger than 5 cm<sup>3</sup> and smaller than half of the total volume of the dispenser.

5. A dispenser according to any of claims 2 - 4, wherein upon normal use of the dispenser the view holes have a vertically directed rectangular shape the lower end of which being located at about the same level as the upper level of the sink reservoir.



6. A dispenser according to any of claims 1-5, wherein the material of the dispenser is resistant to highly alkaline products.

7. A dispenser according to claim 6 wherein this material is polypropylene or polyethene.

8. A dispenser according to any of claims 1 - 7 wherein the colour of said dispenser is such that a good colour contrast between the dispenser and the detergent briquettes to be applied is obtained.

9. Use of the dispenser according to any of claims 1-7 in an industrial washing machine.

10. Use of the dispenser according to any of claims 1-7 in an industrial single tank reuse ware washing machine.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number  
9107083.9

**Relevant Technical fields**

- (i) UK Cl (Edition K ) DIA
- (ii) Int Cl (Edition 5 ) D06F

**Search Examiner**

M Siddique

**Databases (see over)**

(i) UK Patent Office

(ii)

ON LINE DATABASES : WPI

**Date of Search**

30 May 1991

Documents considered relevant following a search in respect of claims

1-10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB A 2157717 (THE PROCTER & GAMBLE) (detergent releasing vents 3, viewing windows 4 etc; figures 1, 4)	1,9,10 at least
X	US 4365853 (EHRlich) (viewing holes 33, 35, 37, 39, 41 etc)	1,9,10 at least

Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

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